

REMARKS

Claim 45 is amended. Claims 45-47, 49-51 and 54-61 are pending in the application.

Claims 45-47, 49-51 and 54-61 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Shrivastava (U.S. Patent No. 6225745), as modified by Onda (U.S. Patent No. 5395482). A proper obviousness rejection requires the combination of references to teach or suggest all the claim limitations, and there must be motivation for the modification. Claims 45-47, 49-51 and 54-61 are allowable over Shrivastava in view of Onda for at least the reason that the references, individually or as combined, fail to teach or suggest each and every element in any of those claims and there is no motivation for modification.

As amended, independent claim 1 recites a purge gas stream on the body of a reactive precursor feeding manifold where the purge gas stream includes an elongate segment extending from a single-inlet valve to and joining with a purge gas inlet to a plenum chamber, where the elongate segment is entirely substantially aligned on the longitudinal axis of the plenum chamber. Claim 1 additionally recites a plurality of feed streams having elongate segments joining with a plurality of inlets received along the longitudinal axis of the plenum chamber, where such elongate segments are oriented substantially normal relative to the longitudinal axis. The purge gas stream is upstream of all other feed streams. The amendment to claim 45 is supported by the specification at, for example, Fig 1 and the text at page 7, line 13 through page 8, line 5.

Shrivastava discloses piping having a plurality of valves connected to feed streams leading to the alleged plenum chamber, at least a portion of which are all parallel to each other (see Fig. 1b). Shrivastava's most upstream valve is connected to feed stream piping

that has a portion aligned with the longitudinal axis of the region of piping the Examiner has defined as the plenum chamber (attachment to the Examiner's Answer), and a portion that is normal to such axis (Fig. 1b). Shrivastava does not disclose or suggest the claim 45 recited most upstream elongate segment that is aligned entirely on the longitudinal axis and aligned normal to a plurality of other elongate segments.

Onda discloses a first valve (most upstream) connected to a segment that is aligned on a longitudinal axis, and a second valve that is oriented at an angle other than 90 degrees relative to the longitudinal axis. Onda does not disclose or suggest the claim 45 recited most upstream elongate segment entirely substantially aligned with the longitudinal axis and perpendicular to a plurality of other elongate segments that are received along the longitudinal axis.

As combined, the angled segments of Onda and the two-portion upstream piping segment of Shrivastava do not suggest the claim 45 recited uppermost feed stream elongate segment entirely substantially aligned on the longitudinal axis of a plenum chamber with a plurality of feed streams having elongate segments joining with a plurality of inlets received along the longitudinal axis of the plenum chamber, where such plurality of elongate segments are oriented substantially normal relative to the longitudinal axis.

In addition to the above, amended claim 45 recites a structure on the body of the manifold configured to mount to the body directly to a substrate-processing chamber. This amendment to claim 45 is supported by the specification at, for example, Fig 3 and the text at page 8, lines 6-17. Shrivastava discloses an asher having a gas box 12 configured to supply gas to a microwave power generator assembly that in turn connects to a process chamber 16 (Fig. 1b and col. 3, ll 10-23). In order to establish a direct connection as recited in claim 45, Shrivastava's microwave power generator would need to be eliminated.

Since the chamber is a plasma process chamber, removal of the microwave power generator, which generates the plasma, would render the system unsuitable for its intended purpose. Shrivastava therefore teaches away from the claim 45 recited structure on the body of a manifold to mount the body directly to a substrate-processing chamber.

Onda discloses a connection between a manifold and a reagent container. However, since Shrivastava specifically teaches away from direct connection, there is no motivation to modify Shrivastava or combine with the teaching of Onda.

For at least the reasons set forth above, claim 45 is not rendered obvious by the cited combination of Shrivastava and Onda and is allowable over these references.

Dependent claims 46-47, 49-51 and 54-61 are allowable over Shrivastava and Onda for at least the reason that they depend from allowable base claim 45.

For the reasons discussed above claims 45-47, 49-51 and 54-61 are allowable. Accordingly, applicant respectfully requests formal allowance of such claims in the Examiner's next action.

Respectfully submitted,

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